

Korea Geodetic VLBI Station, Sejong

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Abstract This report summarizes activities of Sejong station as an IVS network station during 2013.

1 General Information

The station is located about 120 km south of Seoul, in the middle of Sejong city, which serves as a new administrative capital. The Sejong antenna is 22 meters in diameter, and its slew speed is 5°/sec in both azimuth and elevation. Its specification was designed with consideration for the possible additional set up of small antennas in the future. Sejong has set up a simultaneous multi frequency band (S/X, K, and Q) receiving system. The S/X system can cover regular IVS sessions, and the K,Q system can use the Korean Geodetic VLBI Network with KVN (Korean VLBI Network managed by the Korea Astronomy and Space Science Institute).

National Geographic Information Institute (NGII, <http://ngii.go.kr>) manages the observatory, and Table 1 shows the staff members of the Sejong station. A newly appointed site director, Mr. Ahn Ki Duk, joined us in November 2013.

2 Sejong VLBI System

The Sejong VLBI configuration is listed in Table 2. The antenna is Cassegrain shaped, and the 22-m main reflector consists of 200 rectangular aluminum panels.

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Fig. 1 Layout of the VLBI 22-m antenna, monument pillars 1 to 4, GNSS and UCP (Unified Control Point).

Table 1 Staff members of the Sejong station.

Name	Function	e-mail
Ahn Kiduk	Site Director	akd8@korea.kr
Yi Sangoh	S/W engineer	sangoh.yi@korea.kr
Oh Hongjong	H/W engineer	stockoh11@korea.kr
Han Sangcheol	Antenna system	hsc4907@korea.kr

Each panel has four elevation adjustments at the edge of the panel, so that the antenna main reflector surface can be properly arranged.

Table 2 Sejong antenna parameters.

Parameters	Sejong VLBI
IVS letter codes	Sejong (Kv)
CDP number	7368
DOMES number	23907S001
Location	127°18'E, 36°31'N Elevation 177 m
Diameter of main reflector	22 m
Antenna type	Shaped Cassegrain
Reflector surface accuracy	86 μ m
Operation range	AZ: $\pm 270^\circ$ EL: 0 to 90°
Slew speed	5°/sec (AZ and EL)
FS Version	9.10.4
Data acquisition Rack/Recorder	K4/K5

3 2013 Activities

3.1 Fringe Tests with Tsukuba Antenna

The Sejong antenna carried out several fringe tests with the Tsukuba antenna. We estimated the SEFDs (S: about 30000 / X:2500) of the Sejong antenna with several fringe tests. Its operation has been stopped by work to improve the S-band performance to the required level.

3.2 X-band VLBI Observation with one of the KVN (Korean VLBI Network) Antennas

KASI constructed the KVN of three VLBI antennas. An X-band receiver was installed at the Ulsan station; it proceeded to make a fringe test and a pulsar observation with the Sejong station. The data were transferred to KJCC at KASI.

3.3 H-maser Repair

The DAC20 and cable were replaced and repaired, because we found an error in their reference values during inspection of the H-maser.

3.4 Antenna Motor Controller Repair

An operational failure was found in the four motor controllers for the az/el drive. As a countermeasure for that, one device was delivered to the manufacturer, and it was repaired by them. We have repaired one at present. The full repair is expected to be completed in 2014.

3.5 Filter Exchange

The existing filter frequency was changed to minimize RFI signals in S-band (original: 2.22 Ghz to 2.37 Ghz, new: 2.2 Ghz to 2.3 Ghz).

3.6 Monitoring System

A VLBI monitoring system was installed to allow continuous monitoring of the receiver and back-end device.

4 KASI's SLR Installation Plan

KASI developed an SLR system with a 40 cm telescope in 2012. It will be installed at a place very near to the Sejong observatory. Co-location with VLBI, GNSS, and SLR can be possible at Sejong observatory.

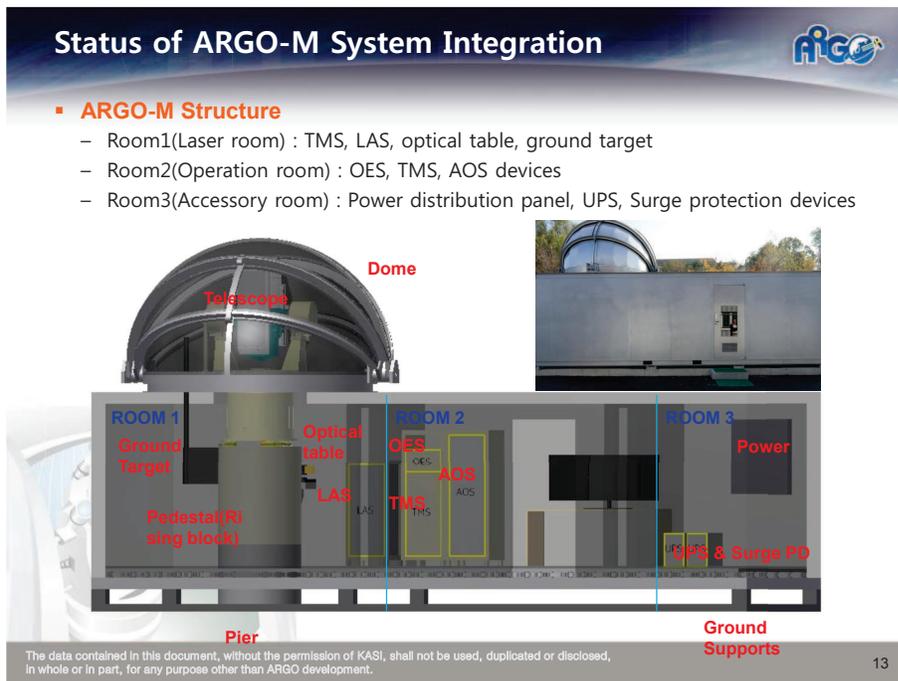


Fig. 2 ARGO-mobile system (by KASI, 2013).